The Effect of Cake Application Supported by Self-directed Learning on The Students' Speaking Skills at Junior High School

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Abstract

This research aimed to investigate the effectiveness of the Cake Application supported by Self-Directed Learning (SDL) in enhancing students' speaking skills at SMP Negeri 3 Galesong Selatan. A quantitative research design with a quasi-experimental approach was used. Data was collected through pre-test and post-test assessments, with a population of 135 eighth-grade students across six classes in the academic year 2024/2025. The sample consisted of two classes, the experimental class (VIII C) and the control class (VIII D), each with 20 students. The study found that the Cake Application supported by Self-Directed Learning (SDL) significantly enhanced students' speaking skills, with the experimental group showing a larger increase in mean scores (68.67) compared to the control group (62.67). Statistical analysis indicated significant enhancements in both groups from the Pre-Test to the Post-Test, with the experimental group demonstrating a more substantial change (Z = -3.949, p = 0.000). Additionally, the experimental group had a higher mean rank (26.80) than the control group (14.20) in the Mann-Whitney U test (Z = -3.770, p = 0.000). with the effect size (Cohen's d ≥ 0.8) indicating a significant effect of Cake Application through Self-Directed Learning (SDL). This demonstrates that the intervention enhanced students' speaking skills more effectively than the conventional method. In conclusion, the study supports the effectiveness of the Cake Application through Self-Directed Learning in enhancing students' speaking skills. The positive results highlight the potential for integrating this application into language education to improve academic performance and suggest its wider application in similar educational contexts.

Keywords: *Cake Application, Self-directed Learning, Speaking Skills.*

Introduction

Language is a fundamental tool for communication, allowing people to express their thoughts, emotions, and information in meaningful ways. Among the four core language skills, speaking holds a crucial role in facilitating real-life interactions and fostering effective communication. However, mastering speaking skills in a second language is particularly challenging, as it requires both linguistic knowledge and the ability to communicate naturally and confidently (Savira & Fauzi, 2023). Many learners struggle with fluency, pronunciation, and self-expression, making speaking one of the most difficult aspects of language acquisition (Rohmah, 2022).

In Indonesia, English is a mandatory subject from junior high school through higher education, as stipulated in Permendiknas RI No. 22 of 2006. Despite its importance, many students lack sufficient opportunities to practice speaking in school settings (Islam et al., 2022). Traditional teaching methods tend to focus more on grammar and writing, leaving little room for real-time spoken interactions. Additionally, classroom environments often do not provide enough exposure to authentic English conversations, limiting students' ability to develop fluency and confidence in speaking (Trinder, 2017). As a result, many students seek alternative ways to improve their English proficiency, including technology-assisted learning and self-directed learning (SDL) (Lai et al., 2022).

The rise of digital technology has significantly transformed language education, making it more accessible and engaging. Mobile applications have emerged as powerful tools that support independent learning, providing learners with a wide range of interactive resources (Gastellóu et al., 2019). These apps allow students to practice at their own pace, listen to native speakers, and receive instant feedback on pronunciation and fluency. Several studies on mobile-assisted language learning (MALL) have shown that mobile applications can effectively enhance speaking skills. Research by Persson & Nouri, (2018) found that mobile apps offer interactive exercises, pronunciation drills, and real-world speaking tasks, improving learners' overall communication abilities. Similarly, Rezaee et al., (2020) demonstrated that mobile-based dynamic assessment (MbDA) positively impacts oral fluency by providing personalized learning experiences. However, despite these promising findings, there is limited research on how specific applications, such as Cake, contribute to speaking skill development, particularly among secondary school students.

The Cake application is an English-learning mobile app specifically designed to improve speaking skills. It provides interactive features such as AI-assisted pronunciation drills, conversation simulations, and repetition exercises, all aimed

2980

at helping learners develop fluency and confidence (Lestari, 2021). The app incorporates real-world video clips, allowing students to engage with authentic spoken English and mimic native-like pronunciation. According to Suárez (2020), Cake offers a flexible and structured approach to speaking practice, enabling students to progress at their own pace. The app's gamified elements, including daily speaking challenges and performance tracking, further enhance motivation and engagement. Batool and Asghar, (2016) also highlighted that mobile applications like Cake increase learners' motivation and linguistic competence, making language learning more enjoyable and effective.

Beyond technology integration, self-directed learning (SDL) has gained attention as a powerful strategy for enhancing speaking proficiency. SDL encourages learners to take responsibility for their progress, allowing them to set goals, choose learning materials, and track their own improvement (Irvani, 2019). Unlike traditional classroom settings, SDL enables students to practice speaking at their own convenience, reinforcing autonomy and self-motivation. Robinson & Persky (2020) argue that SDL empowers students by helping them tailor their learning experiences to suit their individual needs. Several studies have explored the impact of SDL on language learning. Majedi & Pishkar (2016) found that SDL significantly improves speaking accuracy, while Buitrago (2017) demonstrated that it enhances speaking fluency when combined with collaborative learning strategies. Similarly, Olivier (2019) examined the role of SDL in developing writing skills, showing its effectiveness in fostering independent language learning.

Despite the proven benefits of both Cake Application and SDL, research on their combined impact on speaking skills remains limited, particularly in junior high school settings. Most existing studies focus on higher education or adult learners, overlooking the challenges faced by younger students in structured classrooms (Harchegani et al, 2013). Additionally, while previous research has analyzed the effectiveness of Cake in EFL learning (Indah & Muhajir, 2022), few studies have explored its role within an SDL framework. This research gap highlights the need for further investigation into how integrating Cake with self-directed learning can maximize speaking skill development in junior high school students.

This study aims to examine the impact of the Cake application, enhanced by self-directed learning (SDL), on the speaking skills of students at SMP Negeri 3 Galesong Selatan. Specifically, it seeks to identify the speaking skills students develop using Cake with SDL, analyze the speaking skills they develop through the Quizzis application, and assess whether there is a significant difference in students' speaking proficiency when using Cake in combination with SDL compared to Quizzis. By focusing on technology-driven, student-centered learning approaches, the research adds to the growing body of knowledge on digital tools in English language education.

Method

This study employed a quantitative research method using a quasi-experimental design to compare the effectiveness of the Cake application, supported by Self-Directed Learning (SDL), with the Quizizz application in enhancing students' speaking skills. Pre-tests and post-tests were conducted for both the experimental and control groups to measure progress. The experimental group used the Cake application with SDL, while the control group used Quizizz. A pre-test assessed students' baseline speaking skills before the intervention, and a post-test evaluated their improvement after the treatment period. The differences in pre-test and post-test results were analyzed to determine the impact of each approach.

The population of this study consisted of eighth-grade students from SMP Negeri 3 Galesong Selatan, with a total of 135 students divided into six classes. However, the research sample was selected using purposive sampling, focusing on two classes (VIII.C and VIII.D), consisting of 40 students. Class VIII.C served as the experimental group, receiving instruction through Cake and SDL, while VIII.D functioned as the control group, using Quizzis. The selection was based on ensuring that both groups had similar English proficiency levels before the study.

The data collection process involved administering a speaking test to both groups, using a rubric adapted from the Cambridge Curriculum. The speaking test assessed students' vocabulary, grammar, pronunciation, and fluency. To ensure fairness, the pre-test and post-test contained different speaking tasks but maintained the same difficulty level to prevent students from memorizing responses. The data were analyzed using IBM SPSS 27, applying the Wilcoxon Signed Rank Test to compare pre-test and post-test scores within each group and the Mann-Whitney U Test to compare post-test results between groups. Additionally, descriptive statistics such as mean scores were used to identify overall performance trends. Normality and homogeneity tests were also conducted to ensure the validity of the findings.

Results

This section presents the students' speaking skills and explains how the implementation of the Cake Appication supported by Self-directed Learning (SDL) and the implementation of Quizziz Application on the students' speaking skills, especially Vocabulary, grammar, and pronunciation. The experimental class used Cake Appication supported by Self-directed Learning (SDL), while in the control class, the teacher used the Quizziz Application.

The Students' Speaking Skills Obtained through the Use of Cake Application Supported by Self-Directed Learning (SDL).

This study explores how students improved their speaking skills using the Cake application supported by Self-Directed Learning (SDL). To measure the impact of these methods, the study compares students' performance before and after the intervention, with results presented in a table for further analysis.

Table 4.1 The Mean Score of Speaking Performance in Experimental Class

No.	Students Speaking Skills of Sub-Skills	Pretest (O_1)	Posttest (O_2)
1.	Vocabulary	56	72
2.	Grammar	54	60
4.	Pronunciation	55	74
Total		165	206
Mean		55	68,67
Percentage of Increase		24,86%	

The overall speaking score improved from 165 on the pre-test to 206 on the post-test, showing a 24.86% increase. This significant improvement highlights the effectiveness of the intervention.

The Students' Speaking Skills Obtained Through the Use of Quizizz Application in the Control Class

The study also examined how students in the control class developed their speaking skills using the Quizizz application.   To assess their progress, students took pretests and posttests, measuring improvements in vocabulary, grammar, and pronunciation. These results provided a point of comparison with the experimental class.

Table 4.2 The Mean Score of Speaking Performance in Control Class

No.	Students' Speaking Skills of Sub-Skills	Pretest (O_1)	Posttest (O_2)
1.	Vocabulary	57	60
2.	Grammar	54	58
4.	Pronunciation	56	70
Total		167	188

Mean	55,67	62,67
Percentage of Increase	12.58%	

The overall speaking score in the control class improved from 167 in the pre-test to 188 in the post-test, reflecting a 12.58% increase. This indicates that while the Quizizz application helped enhance students' speaking skills, the improvement was moderate compared to the experimental class.

Testing the hypothesis between the students' speaking skills through the use of Cake Application Supported by Self-Directed Learning SDL and through the use of Quizziz Application.

To compare the effectiveness of the Cake app with Self-Directed Learning (SDL) and the Quizizz application on students' speaking skills, the study used SPSS version 27 for analysis. Students in both the experimental and control groups took pretests and posttests to measure improvements in vocabulary, grammar, and pronunciation. This evaluation helped determine which approach was more effective in enhancing speaking skills.

Result of the Normality Test

Table 4.3 The Normality Test of Pre-Test and Post-Test in the Experimental and Control Classes

	Kolmogorov-Smirnov				Shapiro-wilk		
	Research Measurement Group	Statistic	*df*	*Sig.*	Statistic	*df*	Sig.
The Result of the Study	Pre-test (Control class)	0,311	20	0,000	0,760	20	0,000
	Post-test (Control class)	0,311	20	0,000	0,759	20	0,000
	Pre-test (Experimental class)	0,280	20	0,000	0,784	20	0,001
	Post-test (Experimental class)	0,350	20	0,000	0,736	20	0,000

The normality test results indicated that the data were not normally distributed, as all significance values were ≤ 0.05. Since the sample size was small (N = 20), the Shapiro-Wilk test was used, confirming that parametric tests like the t-test were not appropriate. Instead, non-parametric methods were used: the Wilcoxon Signed Rank Test to compare pre-test and post-test scores within each

group and the Mann-Whitney U Test to compare post-test results between the experimental and control groups.

Result of The Homogeneity Test

Table 4.4 The Homogeneity Test of the Experimental and Control Classes

		Levene Statistic	*df1*	*df2*	*Sig.*
The result of Speaking Skills	Based on Mean	1,293	3	76	0,283
	Based on Median	1,488	3	76	0,224
	Based on Median and with adjusted df	1,488	3	63,538	0,226
	Based on Trimmed Mean	1,212	3	76	0,311

The Levene's test showed that all significance values were above 0.05, meaning the data had consistent variance across groups. However, since the normality test was not met, parametric analysis wasn't appropriate. Instead, non-parametric methods were recommended for a more accurate analysis.

Result of The Wilcoxon Signed Rank Test

Table 4.5 Wilcoxon Signed Rank Test of Control class

		N	*Mean Rank*	*Sum of Ranks*
Post-test of control class – Pre-test of control class	Negative Ranks	0	0.00	0,00
	Positive Ranks	20	10,50	210,00
	Ties	0		
	Total	20		
Post-test of Control Class – Pre-test of Control Class				
Z Score		-4,053		
Asymp. Sig. (2-tailed)		0,000		

The results showed that every student in the control group improved their scores from the pre-test to the post-test, with no declines or unchanged results. The analysis recorded a mean rank of 10.50 and a total sum of ranks of 210.00. Statistical testing revealed a Z value of -4.053 and a significance level of p = 0.000, confirming that the improvement was statistically significant. These findings suggest that the Quizizz application played a meaningful role in enhancing students' speaking skills and overall learning progress.

Table 4.6 Wilcoxon Signed Rank Test of Experimental Class

		N	*Mean Rank*	*Sum of Ranks*
Post-test of Experimental Class – Pre-test of Experimental Class	Negative Ranks	0	0.00	0,00
	Positive Ranks	20	10,50	210,00
	Ties	0		
	Total	20		
Post-test of Experimental Class – Pre-test of Experimental Class					
	Z Score			-3,949
	Asymp. Sig. (2-tailed)			0,000

The analysis revealed that every student in the experimental group showed improvement in their speaking scores from the pre-test to the post-test, with no declines or unchanged results. The Wilcoxon Signed Rank Test recorded a Z value of -3.949 and a significance level of p = 0.000, confirming that this improvement was statistically significant. These findings highlight the effectiveness of the Cake application, supported by Self-Directed Learning (SDL), in enhancing students' speaking skills. Moreover, the results suggest that this approach was more successful than using the Quizizz application in the control group.

Result of The Mann-Whitney U Test

Table 4.7 The Mann-Whitney U Test of Experimental and Control Classes

	Research Measurement Group	N	*Mean Rank*	*Sum of Ranks*
The Result of Speaking skills	Control Class	20	14,20	284,00
	Experimental Class	20	26,80	536,00
	Total	40		
	The result of speaking test			
Mann-Whitney U	74,000			
Wilcoxon W	284,000			
Z Score	-3,770			

| Asymp. Sig. (2-tailed) | 0,000 |
| Exact Sig. [2*(1-tailed sig.)] | 0,000 |

The results clearly showed a significant difference in speaking improvement between the two groups. Students in the experimental group, who used the Cake application with Self-Directed Learning (SDL), had a higher mean rank (26.80) and total sum of ranks (536.00) compared to the control group (mean rank 14.20, total sum 284.00). The Mann-Whitney U test results (U = 74.000, Z = -3.770, p = 0.000) confirmed that this difference was statistically significant. This suggests that the Cake application, combined with SDL, had a stronger impact on enhancing students' speaking skills than the Quizizz application.

Additional analysis of Gain Scores further supported this conclusion. The experimental group achieved an average Gain Score of 19.13, placing them in the medium improvement category, while the control group scored only 8.34, falling into the low category. Moreover, Cohen's d effect size was classified as large (d ≥ 0.8), meaning the difference in learning outcomes between the two groups was highly significant. These findings strongly suggest that the Cake application with SDL is a more effective method for improving students' speaking skills compared to using the Quizizz application alone.

Discussion

The Students' Speaking Skills Obtained through the use of Cake Application Supported by Self-Directed Learning (SDL).

The study revealed that students in the experimental group, who used the Cake application alongside Self-Directed Learning (SDL), showed significant improvement in their speaking skills. Their overall mean score increased from 55 in the pre-test to 68.67 in the post-test, with notable gains in vocabulary, grammar, and pronunciation. Vocabulary scores rose from 56 to 72, demonstrating that the app effectively helped students acquire and retain new words. Grammar scores also improved from 54 to 60, though at a more moderate pace, indicating that the self-directed approach allowed students to engage with grammatical concepts at their own speed. The most substantial improvement was in pronunciation, where scores jumped from 55 to 74, highlighting the effectiveness of the app's speech recognition technology and interactive speaking exercises. In contrast, the control group, which used the Quizizz application, showed only moderate progress, reinforcing the superior impact of the Cake application in enhancing speaking proficiency.

These findings align with previous research by Yanthi, (2020), Fitria, (2021), and Hapipah et al., (2021), who also found that the Cake application positively influenced language learning. Students benefited from interactive features like

pronunciation practice, clear transcriptions, and speech recognition, all of which contributed to improved fluency and accuracy. However, other studies, such as those by Rengganis (2023) and Zhao et a,l (2021). suggest that while language-learning apps can enhance vocabulary and fluency, their effectiveness depends on factors like student motivation and engagement. Additionally, technology-based tools may not always produce optimal results when used without teacher guidance. This highlights the importance of combining mobile learning with structured support to maximize its benefits.

A key strength of this study was its integration of Self-Directed Learning (SDL), which helped students take control of their learning process. SDL encouraged learners to set goals, choose materials, and monitor their progress, fostering intrinsic motivation and autonomy. The combination of the Cake application and SDL enabled students to engage with vocabulary, grammar, and pronunciation exercises in a way that suited their individual learning styles. Research by Kim & Lee. (2020) supports this approach, emphasizing that technology-enhanced SDL strategies improve language proficiency and learner independence. Additionally, Wang et al., (2023) argue that authentic, real-life conversations enhance language acquisition, a principle reflected in the Cake application's interactive dialogues.

In summary, the study provides strong evidence that integrating the Cake application with Self-Directed Learning (SDL) significantly enhances students' speaking skills, particularly in vocabulary, grammar, and pronunciation. The statistical analysis, including a Wilcoxon Signed Rank Test (p = 0.000) and Cohen's effect size (d = 0.8), confirms the substantial impact of this approach. Furthermore, this method fosters greater motivation, autonomy, and confidence in language learning. The findings highlight the potential of combining mobile learning applications with SDL to create a more engaging, effective, and learner-centered approach to English language development.

The Students' Speaking Skills Obtained through the use of Quizzis Application.

The analysis of students' speaking skills based on pre-test and post-test results shows improvements in vocabulary, grammar, and pronunciation. Vocabulary scores increased slightly from 57 to 60, while grammar scores rose from 54 to 58, indicating a modest improvement in sentence structure and accuracy. Pronunciation saw the most significant enhancement, with scores jumping from 56 to 70, reflecting better articulation, stress, and intonation. Overall, students' speaking skills improved by 12.58%, highlighting the positive impact of the intervention, particularly in pronunciation.

In the control group, most students were rated as "Good" (90%), with 10% classified as "Fair," and none reaching the "Excellent" level. While the Quizizz

application contributed to improvements in speaking skills, the experimental group using the Cake application, supported by Self-Directed Learning (SDL), showed more substantial progress. This suggests that the Cake application provides a more engaging and effective learning experience, particularly in pronunciation.

Several studies support the positive impact of Quizizz in language learning. Research by Rahman et al. (2020) and Waluyo & Tran, (2023) found that gamified tools like Quizizz enhance vocabulary acquisition and fluency through interactive learning. Additionally, Pham, (2023) highlighted the effectiveness of Quizizz's immediate feedback in reinforcing grammar rules. However, some researchers, such as Nurlely, (2024), caution that gamification may not provide the depth needed for advanced grammar comprehension without teacher guidance. Similarly, Abbasi et al. (2023) argue that while Quizizz can improve phonological awareness, it lacks personalized pronunciation support.

Despite these benefits, some limitations of Quizizz have been noted. Kristiani et al (2022) found that its competitive nature may encourage speed over comprehension, potentially affecting long-term retention. Al-Qahtani (2021) also pointed out that while gamification boosts motivation, it may not be sufficient for mastering complex speaking skills like fluency and pronunciation. This highlights the need for a balanced approach, combining digital tools with traditional teaching methods for more effective language learning.

In contrast, the Cake application, integrated with SDL, proved to be more effective in enhancing students' speaking skills. Research by Aqilah, (2024) and Maulida et al, (2024) suggests that the Cake application's real-life conversation simulations and instant feedback create an immersive language-learning environment, improving students' communicative competence. Unlike Quizizz, which mainly reinforces vocabulary and grammar, Cake allows students to engage in meaningful speaking practice, fostering fluency and pronunciation.

The comparison between Quizizz and Cake highlights the importance of selecting the right tool for language education. While Quizizz is useful for engaging students and reinforcing foundational language skills, the Cake application is better suited for developing higher-order speaking abilities, such as pronunciation and spontaneous conversation. A combined approach, integrating both tools, may offer a more comprehensive learning experience.

In summary, both Quizizz and the Cake application positively impact language learning, but Cake is more effective in improving speaking skills, particularly vocabulary, grammar, and pronunciation. Its interactive and conversation-based features provide students with real-world language practice, leading to better communicative competence. Quizizz, on the other hand, remains a valuable tool for motivation and reinforcement of basic language skills. These findings emphasize the importance of aligning digital tools with specific learning objectives and

ensuring effective integration into language education.

The differences between the students' speaking skills through the use of the Cake Application Supported by Self-Directed Learning SDL and through the use of Quizziz Application.

The comparison between the Cake application supported by Self-Directed Learning and the Quizizz application highlights key differences in how they help students improve their speaking skills. Both tools have their benefits, but they focus on different aspects of language learning. The Cake app offers a more immersive and hands-on approach, while Quizizz is better for reinforcing basic vocabulary and grammar through gamified quizzes.

With the Cake app, students take more control of their learning, thanks to its interactive features like real-life conversation simulations and instant feedback. This approach helps them practice speaking in meaningful, everyday contexts, making their vocabulary, grammar, and pronunciation more natural and accurate. Since it encourages active learning, students engage more deeply with the language rather than just memorizing rules.

On the other hand, Quizizz application is great for drilling vocabulary and grammar but doesn't offer the same level of speaking practice. Its quiz-based format helps students retain information, but it doesn't provide enough opportunities for real conversations or personalized feedback on pronunciation. As a result, while students may improve their language knowledge, they might struggle with fluency and confidence in actual speaking situations.

The key difference between these tools comes down to their teaching styles. The Cake app promotes independent learning, encouraging students to think critically and practice actively, which leads to better speaking skills. Quizizz application, while engaging and fun, follows a more traditional, teacher-led approach that focuses on reinforcing what students already know. Both methods have value, but the Cake app's real-world application makes it more effective for developing strong speaking skills.

Overall, the study suggests that while both tools support language learning, the Cake application supported by Self-directed Learning is better suited for helping students speak more fluently and naturally. Its conversation-based exercises and immediate feedback create a well-rounded learning experience. Meanwhile, the Quizizz application remains a useful tool for building foundational knowledge and keeping students motivated. Ideally, using both together would create a balanced approach one that strengthens basic skills while also providing deeper speaking practice.

Conclusion

The findings of this study demonstrate that the Cake application, supported by

Self-Directed Learning (SDL), significantly improved students' speaking skills at SMP Negeri 3 Galesong Selatan. The experimental group using Cake showed a 24.86% increase in overall speaking proficiency, with vocabulary scores rising from 56 to 72, grammar from 54 to 60, and pronunciation from 55 to 74. Additionally, 35% of students achieved an "Excellent" score, and 65% reached the "Good" level, with no students in the "Fair" or "Less" categories.

In contrast, the control group using the Quizzis application also showed improvement but to a lesser extent, with a 12.58% overall gain. Their vocabulary increased from 57 to 60, grammar from 54 to 58, and pronunciation from 56 to 70. The post-test results classified 90% of students in the "Good" category and 10% as "Fair", with no students achieving an "Excellent" score.

Comparative analysis through the Wilcoxon Signed Rank Test and Mann-Whitney U Test confirmed that both applications were beneficial, but Cake with SDL was significantly more effective. The experimental group's Gain Score of 19.13 (medium category) outperformed the control group's 8.34 (low category), indicating a stronger impact of the Cake Application through SDL on speaking skills. Furthermore, statistical tests showed a large effect size (Cohen's $d \geq 0.8$), reinforcing the superior effectiveness of Cake Application through SDL over Quizzis Application.

These findings highlight the potential of using the Cake application with Self-Directed Learning (SDL) to improve speaking skills, making it a more effective alternative to traditional quiz-based methods like Quizizz Application. The study emphasizes the importance of adopting innovative educational tools to enhance English-speaking skills. Teachers are encouraged to incorporate Cake Application through SDL to boost student engagement, independent learning, and speaking proficiency with interactive exercises and real-time feedback. Future research should explore its impact across various education levels, larger sample sizes, and longer study periods while also examining its integration with other digital learning tools to further support language acquisition.

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